

CLAIMS

1. A method of operating a fuel cell system comprising a fuel cell stack and a plurality of fuel cells associated with the fuel cell stack, the method comprising:
monitoring an operating parameter associated with the fuel cell stack; and
adjusting a temperature of the fuel cell stack based on the operating parameter.
2. The method of claim 1, wherein the operating parameter is a voltage of a fuel cell.
3. The method of claim 1, wherein the operating parameter is a power output from the fuel cell system.
4. The method of claim 1, wherein the operating parameter is a temperature of a fuel cell associated with the fuel cell stack.
5. The method of claim 1, wherein adjusting the temperature comprises adjusting coolant flow through the fuel cell stack.
6. The method of claim 5, wherein adjusting coolant flow comprises restricting coolant flow through the fuel cell stack.
7. The method of claim 6, wherein adjusting coolant flow further comprising unrestricting coolant flow through the fuel cell stack.
8. The method of claim 7, wherein restricting and unrestricting coolant flow are performed as a function of time.
9. The method of claim 7, wherein restricting and unrestricting coolant flow are performed to cause the operating parameter to be a predetermined level.

10. The method of claim 9, wherein the predetermined level is within about 15% of an operating parameter under normal operation of the fuel cell system.

11. The method of claim 1, wherein the fuel cell system further comprises a first end plate associated with a first end of the fuel cell stack, and the method further comprises heating the first end plate.

12. The method of claim 11, wherein heating the first end plate comprises heating a first heating element different than the first end plate.

13. The method of claim 12, wherein the first heating element is adjacent to the first end plate.

14. The method of claim 12, wherein the first heating element is disposed between the first end plate and the fuel cell stack.

15. The method of claim 11, further comprising:
flowing a fluid through a flow channel defined by the first end plate.

16. The method of claim 15, wherein the fluid is heated.

17. The method of claim 11, further comprising:
heating the first end plate with a heating element disposed on the first end plate.

18. The method of claim 11, wherein the heating is performed electrically.

19. The method of claim 11, further comprising:
heating a second end plate associated with the fuel cell stack.

20. The method of claim 19, wherein heating the second end plate comprises heating a second heating element different than the second end plate.

21. The method of claim 20, wherein the second heating element is adjacent to the second end plate.

22. The method of claim 20, wherein the second heating element is between the second end plate and the fuel cell stack.

23. The method of claim 1, wherein the method is performed as a feedback loop.

24. A method of operating a fuel cell system comprising a fuel cell stack and a plurality of fuel cells associated with the fuel cell stack, the method comprising:
monitoring voltages of a set of fuel cells; and
restricting coolant flow through the fuel cell stack when one or more of the monitored voltages deviates from a predetermined voltage range.

25. The method of claim 24, wherein the set of fuel cells includes all the fuel cells associated with the fuel cell stack.

26. The method of claim 24, wherein restricting coolant flow is performed when one or more of the monitored voltages deviate by more than about 10% from an operating voltage under normal operation of the fuel cell system.

27. The method of claim 24, further comprising unrestricting coolant flow through the fuel cell stack.

28. The method of claim 27, wherein unrestricting coolant flow is performed when the monitored voltages are in the predetermined voltage range.

29. The method of claim 27, wherein unrestricting coolant flow is performed after a predetermined time of restricting coolant flow.

30. The method of claim 24, wherein the fuel cell stack further comprises a first end plate associated with the fuel cell stack, the method further comprising:

monitoring an operating parameter of the fuel cell system; and

adjusting a temperature of the first end plate based on the operating parameter.

31. The method of claim 30, wherein adjusting the temperature comprises heating a first heatable element.

32. The method of claim 30, wherein adjusting the temperature comprises flowing a fluid through the first end plate.

33. The method of claim 30, further comprising:

adjusting a temperature of a second end plate associated with the fuel cell stack based on the operating parameter.

34. The method of claim 30, wherein the operating parameter is a power output of the fuel cell system.

35. The method of claim 30, wherein the operating parameter is a temperature of the fuel cell stack.

36. The method of claim 31, wherein the operating parameter is a temperature of the first heatable element.

37. The method of claim 31, wherein the heatable element is adapted to heat an outer periphery of the fuel cell stack.

38. The method of claim 24, wherein the method is performed as a feedback loop.